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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/709,843

06/01/2004

Graham Balsdon

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05/05/2006

AKA CHAN LLP

900 LAFAYETTE STREET

SUITE 710

SANTA CLARA, CA 95050

EXAMINER

KIK, PHALLAKA

ART UNIT

PAPER NUMBER

2825

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/709,843	<b>Applicant(s)</b> BALSDON ET AL.	
	<b>Examiner</b> Phallaka Kik	<b>Art Unit</b> 2825	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 6/1/04, 6/2/04, 6/6/05, 6/22/05, 4/24/06.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1-12 and 16-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 13-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the ~~Examiner~~ *draftsperson*.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)          |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. <u>20060424</u> .                                    |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>6/2/04, 6/6/05, 8/23/04, 6/22/05</u> .                                    | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. This Office Action responds to the Application and Application Data Sheet filed on 6/1/2004, IDS filed on 6/2/2004, 8/23/2004, 6/6/2005, and 6/22/2005, and interview conducted on 4/24/2006. Claims 1-22 are pending, wherein claims 1-12, 16-22 are withdrawn as being directed to non-elected inventions without traverse as given below.

#### ***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-12, drawn to a method for performing an automated routing of a first track segment of the net based on the determined track width which is determined based on the determined current density function, classified in class 716, subclass 13.
- II. Claims 13-15, drawn to a method for performing an automated routing of a first track segment of the net in a gridless layout based on the first track width provided, classified in class 716, subclass 13.
- III. Claims 16-22, drawn to a method for performing an automated routing of a first track segment of a net in the gridless layout using the created Steiner tree and the provided first track width, classified in class 716, subclass 13.

3. The inventions are distinct, each from the other because of the following reasons:

Inventions II, III and I are related as combinations and subcombination, respectively. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other

combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because the "provided track width" can be determined by other methods, other than that of invention I. The subcombination has separate utility such as track width and/or current density for other methods for analyzing and designing the circuit.

Inventions II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct if they do not overlap in scope and are not obvious variants, and if it is shown that at least one subcombination is separately usable. In the instant case, subcombination of invention III has separate utility such as applying the routing specifically using the particular Steiner tree created. See MPEP § 806.05(d).

4. Because these inventions are independent or distinct for the reasons given above and the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Melvin D. Chan (Reg. No. 39,626) on 4/24/2006 a provisional election was made without traverse to prosecute the invention of invention II, claims 13-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-12, 16-22 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Drawings***

7. The drawings filed on 6/1/2004 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

### ***Claim Objections***

8. **Claims 13-15** are objected to because of the following informalities:

As per **claim 13**, "automated" (line 7) should be --automatic-- for further clarification and for proper antecedent basis for "automatically routed" (lines 9).

As per **claim 15**, "automated" (lines 1-2) should be --automatic-- for further clarification and for proper antecedent basis, as per suggested corrections of claim 13 above, from which the claim depends.

As per **claims 14-15**, the claims are also objected to for incorporating the above errors into the respective claims by claim dependency.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. **Claims 13-15** are rejected under 35 U.S.C. 102(b) as being anticipated by **Ng** (U.S. Patent No. 4,965,739).

As per **claim 13**, the gridless layout provided is illustrated in Fig. 2 (see also col. 3, lines 50-57); the plurality of pins of the gridless layout provided are further described in col. 4, lines 1-14; the track widths provided for the track segments are described in col. 4, lines 15-53, wherein since the density is calculated from the various track widths, the various track widths must exist or previously provided in order to make this calculation; and the automatic routing of the tracks having the track widths is further described in col. 5, line 34 to col. 6, line 4.

As per **claim 14**, all of the elements of claim 13, from which the claim depends, are discussed in the rejection of claim 13 above, wherein since a net to be routing can have many tracks or track segments with corresponding different widths (see col. 4, lines 15-55), the first and second, and subsequent track segments are accordingly routed as part of the method.

As per **claim 15**, all of the elements of claim 13, from which the claim depends, are discussed in the rejection of claim 13 above, wherein the forming of a grid based on positions of the pins are also part of the vertical columns and horizontal tracks forming the grid from which the route paths are connected to the pins (see col. 3, line 58 to col. 4, line 15; col. 6, lines 21-40), wherein the computed cost used in routing effectively routes around the obstacle using the unobstructed path, for which the routing cost is

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lowest (see col. 5, lines 48-65) and also as part of the various tracks can be moved (i.e., around the obstacles, such as the circuit modules and/or other wiring interconnects) for optimal routing (see col. 6, line 41 to col. 7, line 61).

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Therefore, Applicant is herein requested to consider them carefully in response to this Office Action. In particular, the following prior arts made of record are most relevant:

Teig et al. (U.S. patent no. 6,526,555); Dutta et al. (U.S. patent no. 6,349,403); and Do et al. (U.S. patent no. 5,353,235).

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phallaka Kik whose telephone number is 571-272-1895. The examiner can normally be reached on Monday-Thursday, 8:30AM-7PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Chiang can be reached on 571-272-7483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**Any response to this action should be mailed to:**

Commissioner for Patents

P. O. Box 1450

Alexandria, VA 22313-1450

**or faxed to:**

571-273-8300



Phallaka Kik  
U.S. Patent Examiner  
April 25, 2006